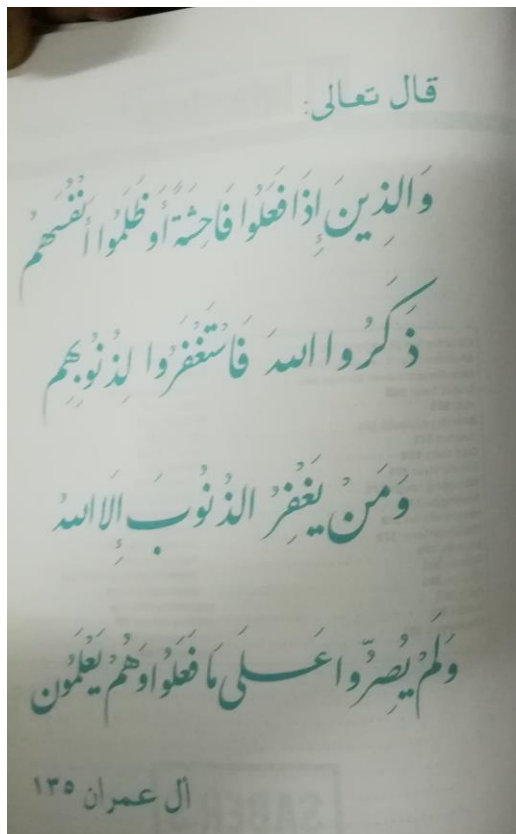


10 Infections

- Classification of bacteria **365**
- Miscellaneous G +ve bacteria **366**
- Miscellaneous G -ve bacteria **367**
- Scarlet fever **368**
- PUO **369**
- Boils (Furunculosis) **371**
- Tetanus **372**
- Cold sores **374**
- Enteric fever **375**
- Whooping cough **376**
- Meningitis **377**
- Herpes viruses **378**
- Glandular fever **378**
- Measles **379**
- Rubella **381**
- Mumps **381**
- Polio **382**
- Rabies **382**
- Chickenpox **383**
- Shingles **384**
- Malaria **385**
- Giardia & amoeba **387**
- Septicemia **388**
- Nematodes **389**
- Cestodes **390**
- Trematodes **391**
- Antibiotic **392**
 - Pencillins **392**
 - Cephalosporins **394**
 - Macrolides **397**
 - Quinolones **398**
 - Aminoglycosides **401**
 - Tetracyclines **403**
 - Metronidazole & Tinidazole **405**
 - Other antibiotics **406**
- Incubation periods **408**
- Notifiable diseases **409**
- Put in your mind **409**
- Test yourself **411**

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1. Classification of Bacteria

	Gram +ve	Gram -ve
Cocci	- Staphylococci (MRSA, S. aureus, S. epidermidis) - Streptococci e.g. Strept. pneumoniae, enterococci, anaerobic strept.	- Neisseria (N. gonorrhoea) - Moraxella
Bacilli	- Aerobes e.g. - Bacillus anthrax - Corynebacterium diphtheriae - Anaerobes: e.g. - Clostridia C. Botulinum C. tetani	E. coli - Salmonella - Shigella - Klebsiella pneumoniae - Pseudomonas aeruginosa - Haemophilus influenzae - Brucella - Bordetella pertussis - Vibrio cholera
Anaerobes	- Bacteroides (wound infection) - Mycobacterium T.B.	
Obligate intracellular bacteria	- Chlamydia: e.g. ch. trachoma - Coxiella - Rickettsia - Legionella - Mycoplasma pneumoniae	
Spirochetes	- Treponema (syphilis, yaws, pinta) - Leptospira (Weil's dis.) - Borrelia (relapsing fever, Lyme disease)	

365

2. Miscellaneous G+Ve Bacteria

1. Staphylococci:

- When pathogenic they are always staph. aureus
- They infect skin, lids or wounds
- Severe Staph. aureus infections are pneumonia, osteomyelitis, septic arthritis, endocarditis, septicemia.
- Staph. aureus toxins cause **Food poisoning** and **toxic shock syndrome toxin** (TSST1)
- Deep Staph. Infections need ≥ 4 weeks of **flucloxacillin**
- Staph. aureus IV = removal of F.bs e.g. prostheses

R/FLUMOX 500 VIALS 1X4X28

2. Methicillin resistant staph. (MRSA)

- Hospital acquired infection
- Cause pneumonia, Septicemia, wound infections & death
- Prevention:
 1. Wash your hands & your stethoscope (also TV remote control, etc)
 2. Look after intravascular catheter when on ICU
 3. Use gowns/gloves when dealing with infected patients
 4. Masks are needed during contact with MRSA pneumonia.
 5. Treatment is in the ICU

3. Streptococci

- Group A Strept. (e.g. Strept pyogens) are common pyogens causing wound and skin infections (e.g. impetigo, erysipelas), tonsillitis, scarlet fever
- Necrotizing fasciitis, toxic shock or septicemia
- Late complications are rheumatic Fever & Post streptococcal glomerulonephritis
- Strept. Pneumonia cause **pneumonia**, O.M., Meningitis, Septicemia
- Strept. **Milleri** is a very common cause of **dental caries**
- Enterococcus faecalis cause **UTI**, wound infections & septicemia
- Strept. Usually respond to a **combination of ampicillin & aminoglycosides** e.g. gentamicin

366

4. Clostridia:

A. **C. Perfringens** cause wound infections & gas gangrene = shock or renal failure after surgery or trauma

• Treatment:

1. Debridement is vital
2. Benzyl penicillin 1.2-2.4g/6h IV + clindamycin 900mg/8h IV, antitoxins & hyperbaric O₂ may also be used
3. Amputation may be necessary

B. **C. Botulinum (Botulism)**: C. botulinum toxin blocks release of acetylcholine causing descending flaccid paralysis

- Botulism spread by food or wound botulism
- Signs: afebrile flaccid paralysis, dysarthria, dysphagia, diplopia, ptosis, weakness, respiratory failure, dry mouth, fixed or dilated pupils

• Treatment: By expert

1. Botulism antitoxin IM.
2. Benzyl penicillin, Metronidazole

3. Miscellaneous Gram -Ve Bacteria

1. Enterobacteria

- Normal gut flora
- e.g. E. coli, shigella, salmonella, klebsiella
- Sensitive to ampicillin & trimethoprim
- They are common cause of UTI & intra-abdominal sepsis

2. Pseudomonas aeruginosa

- It is a serious pathogen
- It causes pneumonia, septicemia, UTI, wound infection, osteomyelitis & skin infections
- the main problem is its increasing antibiotic resistance
- Treatment: piperacillin + an aminoglycoside (TAZOCIN + AMIKIN)
- Ciprofloxacin and ceftazidime are useful. (CIPRO + FORTUM)

367

3. Brucellosis

- Common in the **Middle East** (مسبب شرب لبن الماعز النسي)
- Caused by **B. Maltensis** & **B. Abortus** and others

■ Symptoms may last for years

They may be:

1. Fever (PUO), sweats, malaise, anorexia, vomiting, Wt. loss,
2. Hepato-splenomegaly, constipation, diarrhea, **myalgia**, backache
3. Arthritis, sacro-iliitis, rash, bursitis, orchitis, depressions

- **Complications:** Osteomyelitis, SBE, abscesses (lung, Liver, Spleen), meningo-encephalocoele

- **Diagnosis:** By blood culture (7, 6 weeks) or serology if titre > 1:40 in non-endemic areas.

- **Treatment:** Doxycycline 100mg/12h PO for 6 weeks (R/vibramycin 100 1x2x6weeks) + streptomycin 1gm/day IM for 2-3 weeks or doxycycline 100mg/12hr. PO for 6 weeks + rifampicin 300 mg 1x3 (**VIBRAMYCIN + RIMAKTAN**)

4. Scarlet Fever الحمى القرمزية D&T

- Caused by β -haemolytic strept Group A

- The I.P. is **2-4 days**

■ Diagnosis:

A. History: ask about:

- o Sore throat
- o Rash
- o Flushed appearance
- o Headache
- o Vomiting

B. Examination: Look for:

- o Tonsillitis with fleck of pus
- o Tender cervical lymphadenitis

368

- o A **furred tongue** initially which becomes red and smooth later (**strawberry tongue**)
- o A bright pink skin rash with tiny red spots (punctate erythema) which spares the circum-oral region.
- o Skin peeling especially on the hands & toes after a few days.

■ Management:

1. Penicillin V

R/OSPEN 400 SUSPENSION 1X4X10 DAYS

2. R/PANADOL 1X4

5. PUO (Pyrexia of Unknown Origin)

1. Infections	- o Abscesses - o Salmonella (typhoid fever) - o Brucella - o Rheumatic fever, SBE - o TB	- o Amoeba - o Malaria - o Schistosomiasis - o Fungi - o HIV - o Typhus
2. Neoplasms	especially lymphomas	
3. Connective tissue disease	- o Rheumatic arthritis - o Polymyalgia rheumatica	- o Giant cell arteritis - o SLE
4. Others	- o Pulmonary embolism (PE) - o Stroke - o BID	- o Anti-convulsants - o Propylthiouracil (PTU) - o Procainamide - o Drugs as Antibiotics

■ Examples of intermittent fevers: always think of:

- o Malaria
- o Septicemia
- o UTI
- o Filaria
- o PID
- o SBE
- o TB

369

■ History: Ask about:

- **The method of recording the temperature.** Patients may say they have a raised temperature when they actually mean they feel hot/sweaty flushed.
- Medications
- **Other symptoms:** rash, myalgia, wt. loss, pain, cough
- **Contact** with infectious disease
- **Past medical Hx**, malignancies, HIV
- **Animal** contacts: parrots (psittacosis)
- **Travel** especially to **malarious area**

■ Examination: Look for:

- o Clubbing, splinter ages, joint effusions, rashes
- o ENT infections
- o Cx lymphadenopathy
- o Chest infections
- o Heart murmurs
- o Organomegaly

■ Investigations:

- o CBC: infection, lymphoma, leukemia
- o **Glandular fever test**
- o ESR: infections, malignancies, temporal arteritis
- o LFTs: malignancies, hepatitis
- o Urine: Infection, renal cancer
- o Stool: tropical infection, clostridium difficile
- o Viral titres & blood cultures
- o CXR: TB, sarcoid, lymphoma, psittacosis, metastases

References:

1. GP: P 202, 203, 204
2. OHCM: P 376, 377

370

Tip:

1. Refer for infectious disease specialist if fever lasts more than 3 weeks.
2. Blind Abs are better avoided, refer for diagnosis first.

6. Boils (Furuncles) D&T

- Common skin infection, abscess which involves a hair follicle & its associated glands

■ History:

- o A spot almost anywhere on the body
- o Becomes painful and inflamed
- o This progress to a **tense, swollen, erythematous lump**
- o If left the boil points (forms ahead) and either regress or discharge its contents.
- o Boils often come **after another & tend to be recurrent**

■ Examination: look for

- o The above features
- o Lymphadenopathy

■ Investigations:

- o For recurrent boils, take nasal swabs to check for staph, aureus.
- o **Exclude DM**

■ Management

1. Give **analgesia**: Panadol, Brufen
2. **Dress with Mg sulphate paste** under an absorbent dressing if the boils look ready to discharge
3. If the surrounding skin is erythematous or **lymphangitis** is present

Give R/FLUMOX 250, 1X4X5

371

4. If the boil is very tense and painful relief may be gained by incising it through its pointing head with the tip of a scalpel blade, after spraying the boil with ethyl chloride, the boil can be gently squeezed to massage pus out and dry dressing.
5. If the patient is found to be a carrier of Staph give Flumox oral & anti-septic shower soap for 2 weeks.

7. Tetanus "Locked Jaw" سكر

- **Caused by** tetanospasmin, clostridium tetani exotoxin which causes Ms spasm and rigidity.
- **Pathogenesis:**
 - Spores of C.tetani live in faeces, soil, dust and on instruments & any scratch or abrasion, discontinuity of skin or mucosa e.g. cuts, burns, ear piercing, banding of piles.
 - The Patient will have no evidence of recent wounds. **Signs appear from 1 day to several months** from the (often forgotten) injury.
- **C/P:**
 - A. **Prodroma** fever, malaise & headache
 - B. **Classical features:**
 - **Trismus** (Lock jaw)
 - Hence difficulty in opening mouth
 - Hypertonic facial ms.
 - **Opisthotonus**: spasms (which at first may be induced by movement, injections, noise etc. but later are spontaneous & that may cause dysphagia & respiratory arrest.
 - Automatic dysfunction (arrhythmia ± wide fluctuations in BP)

■ Poor prognosis

1. Short incubation
2. Trismus leads to spasm in 48 hrs.
3. Neonates
4. Elderly
5. Post infective
6. Post partum (a big cause of maternal mortality worldwide)

■ Differential diagnosis

1. Dental abscess (both cause trismus)
2. Rabies
3. Strychnine poisoning
4. Phenothiazine toxicity (usually only affects facial & tongue ms.)

■ Treatment

1. Get help on ICU
2. ABC (may need tracheostomy & ventilation)
3. Monitor ECG+Bp+SpO₂ (keep > 92%) e.g. with O₂ mask + reservoir
4. Careful fluid balance
5. Human tetanus immune globulin (HTIg) 5000-10,000 i.v. to neutralize toxin or R/Tetanus anti toxin U vials.
6. Aim to keep patient asleep but reliable to obey simple commands. Give Diazepam 5-20 mg/8h PO (mild disease) or to control spasms, give Diazepam 0.05-0.2 mg/kg/hr .b IVI (140 mg. / day)

R/VALIUM AMP.

7. Give R/VIBRAMYCIN CAP. كسوة كل ١٢ ساعة

■ Prevention of tetanus:

1. Immunization with tetanus toxoid

A. Booster doses

1. 1st year: dose
2. At school entry (about 6 years)
3. At early adulthood (about 12 years) then every 10 years.
 - Once 5 injections have been given, re-vaccinate only at the time of significant injury.
 - Consider final dose at 65 years.

B. Primary immunization of adults

1. 0.5 ml. toxoid IM repeated twice at monthly interval.

2. Wounds:

- Any cut wounds needs an extra dose of 0.5 ml. toxoid IM, unless already fully immune (a full cause of toxoid or a booster in last 10 yrs.)
- If non-immune give 2 further injections (0.5 ml. IM) at monthly intervals.
- If partially immune (e.g. has had a toxoid booster or a full course (10yrs previously) → a single booster dose is enough.
- R/TETANUS TOXOID AMP.

2. Human Tetanus Immunoglobulin:

- A. If immune or partially immune, wound is dirty, old (>6h), infected, devitalized or soil contaminated.
 - Give 250-500 IM using a separate syringe & site to the toxoid injection.
- B. If immune status is unknown, assume that the patient is non-immune اعتبره غير محمي
 - Hygiene education & wound debridement are of vital importance.

R/ANTI-TETANIC SERUM AMP. (1500 IU)

8. Cold Sores دفت

- Dry, cracked lips are common especially during winter & these can be treated by vaseline
- True herpes simplex (HSV-1) lesions are less common.

■ Diagnosis

• History:

- HSV-1 infection usually affects the lips, tongue, anterior buccal mucosa or nostrils.
- It is more in children

- It starts with painful ulcers or vesicles which form singly or in clusters and is often seen during another upper respiratory tract infection.
- The vesicles progress to crusts and often become secondary infected forming of impetigo patches.

• Examination:

- If the patient presents at the impetigo stage, it can be difficult to determine whether or not the underlying lesion is herpetic.

■ Management

1. Symptomatic treatment, use paracetamol as analgesic
2. For lesion inside the mouth or if vesicles are wide spread in the mouth.
 - Give R/ZOVIRAX 500 MG. 1X5X5 (ACYCLOVIR)
 - Or R/ZOVIRAX 100 MG SUSPENSION 5 ML.X2X5
3. For skin lesion lips:
 - Give Acyclovir (topical)
 - R/ZOVIRAX OINT. 1X5X5
 - The total duration of treatment is 5 days
4. Use Flumox if 2ry infected.

9. Enteric Fever سكر

- Typhoid and paratyphoid are caused by **Salmonella thyrphi & S. Paratyphi**.
- I.P: 3-21 days
- Spread: Feco-oral

■ Presentation:

1. Usually malaise, headache, high fever with relative bradycardia.
2. Cough, constipation or diarrhea
3. May be coma, delirium, meningism
4. Diarrhea is more common after the 1st week
5. Epistaxis, abdominal pain, bruising & splenomegaly may occur.

■ Treatment:

1. Fluid replacement & good nutrition (see below)
2. Give R/CIPROFAR 500MG/12 HRS. PO FOR 6 DAYS

قرص كل ١٢ ساعة لمدة ٦ ايام
It is the best anti-microbial ttt for typhoid

- **Alternatives**
Cefotaxim: R/CEFOTAX 1GM.VIAL
3. In severe diseases give Ciprofloxacin IV or IV Cefotaxim for 10-14 days.

يوضع حاملو المرض تحت الملاحظة ويسمون من طمس
الطعام أو حملة
يعزل المريض ويتم تعقيم الأغطية والملابس
• راحة شامة بالسريبر لمدة ٢ أسابيع
• تناول وجبات غنية بالسعرات الحرارية وقليلة
السكريات مثل السوائل، ثوبية الخضار، لبن - بيض
نصف مسلوق - فواخ أو أرانب مقرومة - جيلي - عصير
جريب عسل.

- **Complications:**
Osteomyelitis, GI bleeding, GI perforation, cholecystitis.
- **Treatment of chronic carriers**
R/CIPROFAR 500MG. 1X2X6 WEEKS
Cholecystectomy may be needed (for carriers)
• N.B. Don't rely on Widal test in diagnosis, it may be - ve

References:
1. OHCM: P414
2. Atlas-9: P43-46

10. Whooping Cough SQR

- **C/P:**
• Catarrhal phase
• Severe paroxysmal cough

- **Treatment:**
R/ERYTHROCIN 250 1X4X10 DAYS
Erythromycin should be given to non-immunized child contacts.

11. Meningitis SQR

- **Common causes:**
1. Neisseria meningitidis
2. Viral meningitis

■ **Diagnosis:**

• **History:** Ask about

1. An acute illness of 24-48 hrs. duration
2. Fever
3. Headache
4. Photophobia
5. Drowsiness
6. Vomiting
7. Neck Stiffness
8. Rash (N. Meningitidis)

• **Examination:** Look for

- Pyrexia
- Cold Peripheries
- Pallor and abnormal skin color
- Drowsiness
- Vomiting
- Pain on flexing the cervical spine
- Pain on straight-leg raising (Kernig's sign)
- Decreased muscle tone in a baby
- Irritability
- a petechial rash which does not blanch on pressure (late sign)



► **Meningism** = Neck stiffness, photophobia, Kernig's sign (pain + resistance on passive knee-extension with hip fully flexed).

► Always examine the patient for other causes of pyrexia e.g. ears, throat, chest. Neck pain is more often due to cervical lymphadenopathy of an upper respiratory tract infection.

Testing for Kernig's sign: The patient's leg is flexed at the hip and knee, then extended at the knee as above. If positive, there is resistance to knee extension in this position and pain is felt at the back of the neck.

Reference: of this figure: Oxford handbook of clinical examination 1st ed: p 353

■ **Management:**

1. Admit to hospital
2. Give Benzyl penicillin 1.2 gm. IM/IV if >2yrs. & 600 mg. if <2yrs.
► Don't delay antibiotic dose
3. Give Dexamethasone IM
4. The rest of Management is done in ER

References: OHCM: P 806,807

12. Herpes Viruses

1. HSV1
Initial infection may be a symptomatic or present with gingivostomatitis, leads to lifelong latency and recurrence as herpes labialis (cold sores)
2. HSV2
Genital herpes
3. HSV3
Varicella Zoster virus
• Primary infection is Chicken Pox "Varicella", IP around 14 days.
• Reactivation causes Shingles.
4. CMV
Cytomegalovirus
• May be asymptomatic or causes a glandular fever type syndrome which may be complicated by Guillain-Barré or Bell's palsy.
5. EBV
Primary infection causes glandular fever & the virus is then latent in B lymphocytes.
6. HHV8
• Also known as Kaposi sarcoma associated virus
• Sexually transmitted.

13. Glandular Fever (Infectious mononucleosis) DGT

- Glandular fever is an acute viral infections, mainly affecting teenagers is a common general practice problem.

- I.P: is usually 7-10 days or longer

■ **Diagnosis:**

• **Hx:** Ask about:

- Sore throat
- Fever
- Headache
- Tiredness
- Malaise and anorexia

• **Examination:** Look for:

- Tonsillar enlargement with exudate which can be difficult to distinguish from bacterial or viral
- Petechial hges on the soft palate
- Posterior cervical lymphadenopathy
- Hepato-splenomegaly
- Maculo-papular rash

• **Investigations:**

1. CBC & film will show neutrophil leucocytosis = $1-20 \times 10^9$
2. LFTs if jaundice is present

■ **Management:**

1. Advise rest, analgesia & fluids in the acute phase
2. Avoid alcohol
3. Beware that amoxicillin may cause a rash in glandular fever
4. Avoid contact sports when the Spleen is enlarged
5. Local anesthetic that Lozenges may be helpful

R/BRADORAL 1X3 أقراص مص (استحلاب)

6. Metronidazole 200mg.x3 may help the oral lesions

R/FLAGYL 250 SYP. 1X3

7. Prednisolone 30 mg. od for 1 week may help if the symptoms are prolonged or severe

R/PREDNISOLONE TAB 5MG. أقراص مرة واحدة يومياً لمدة أسبوع.

8. If lymphadenopathy, fatigue, myalgia persist beyond 3 months, consider post viral fatigue syndrome

14. Measles الحصبة SQR

- I.P. = 7-21 days

■ **History and examination:**

1. **Prodroma:**

- Flue like illness (rhinitis, conjunctivitis fever)
- Koplik's spots on the buccal Mucosa (grain of salt-like)

spots) = (discrete, small, white spots)

2. Rash:

- 24-48 hrs later
- Macular, dusky, pink
- 3. Uncomplicated Measles lasts 7-10 days.

■ Complications:

1. Bacterial otitis media
2. Bronchopneumonia
3. Purulent conjunctivitis
4. Encephalitis

■ Management:

1. No specific treatment
2. Antibiotics for 2ry bacterial infections
3. **If patient is ill or immune compromised** do the following:

- Isolate in hospital
- Ensure adequate nutrition (catabolism is very high)
 - Continue breast feeding even during diarrhea
 - Pass a NGT if intake is poor
- Frequent **Mouth washes** with water + 1% **Gentian violet** to mouth lesions.

- **Vit A** 100,000 units for 2 weeks + 100,000 units after 6 weeks.

- For children: **Dose = 50,000 units**

- C.I. in pregnancy

- **R/A-VITON AMP** (100,000 UNIT)

■ Measles immunization:

1. MMR dose 1: at about 13 months – 0.5ml. SC
2. MMR dose 2: at 3½ - 5 yrs.
3. Any non-immunized adult is eligible for MMR (exclude pregnancy)
4. If >18 months, the 2 doses of MMR should be separated by 3 months.

References

1. GP: P 203, 206
2. Oxford handbook of clinical specialties: P 142

16. Rubella (German Measles) الحصبة الألمانية

- I.P. = 14 - 21 days

- **Infective:** 5 days before & 5 days after the rash starts.

■ History & examination:

- Mildness characterized by conjunctival suffusion and rhinitis
- Then after 24 hrs. discrete light pink maculo-papular rash.
- Maybe enlarged LNS in the post-auricular and sub-occipital groups.

■ Complication:

- Small joint arthritis
- Malformations in utero

■ Management:

- Symptomatic ttt
- **The rash should persist no longer than 5 days**
- Refer for foetal assessment if infection during pregnancy.

References

1. GP: P 207, 208
2. Oxford handbook of clinical specialties P 142

16. Mumps التهاب الغدة الكظرية

- I.P. = 14 - 21 days

- **Infective 7 days before & 9 days after** parotid swelling starts.

■ Symptoms & signs:

- **Prodroma:** Malaise, fever, painful parotid swelling
- **Parotid gland swelling** makes the angle of the jaw impalpable.

■ Complications:

- **Orchitis** affects 1/3 male cases (± infertility)
- Abdominal pain, usually due to pancreatitis or oophoritis.
- Acute lymphocytic meningitis.

■ Management:

- No specific treatment
- Paracetamol as antipyretic & analgesic
- Orchitis may respond to **prednisolone** 40mg. Od in adults

- for 4 days
- In most cases the illness lasts for <15 days

17. Poliomyelitis شلل الأطفال

- Highly contagious disease
- Spread by **droplet** or **faeco-oral**
- I.P = 7 days

■ Symptoms & Signs:

1. Pre-paralytic stage

2. Flu-like prodroma

- Fever
- Neck stiffness
- Tachycardia

3. Paralytic Stage

- Myalgia
- LMN Signs
- Respiratory Failure

■ Risk Factors:

- Adulthood
- Pregnancy
- Post-Tonsillectomy
- Muscle fatigue/trauma during I.P

■ Management:

- Only enough **exercise** to prevent wasting but **not so much** as to increase weakness in already damaged muscle.

18. Rabies السعار

- **Rhabdovirus** spread by bites from any infected mammal e.g. bats, dogs, cats, foxes or raccoons.
- I.P. usually **9-20** days so give prophylaxis even several months after exposure.

■ C/P:

Prodroma	Headache, malaise, abnormal behavior, agitation.
Furious Rabies	Muscle spasms + profound terror from water (Hydrophobia)
Dumb Rabies	20% progress to "Dumb rabies" starts with Flaccid

■ Pre-exposure prophylaxis:

(e.g. vets., zoo keepers, customs officials, bat handlers, travelers to rabies area for >1 month)

- ▶ Give human diploid cells strain vaccine (1 ml i.m) on day 0, 7, 28 and again at 2-3 years if still at risk

■ Treatment if bitten where rabies is endemic:

a. If previously immunized:

- Give vaccine (1ml. IM) on day 0 and 3

a. If previously unimmunized:

- Give vaccine on day 0, 3, 7, 14, 28
- Give human rabies immunoglobulin **20 u/kg. on day 0** (1/2 dose given IM & 1/2 dose locally infiltrated around the wound).

References:

- OHCM: P 420

19. Chickenpox (Varicella) Herpes Zoster الجدري المائي

- I.P = 11-21 days

- Spread = droplet

- Infectivity = 4 days before the rash, until the lesions have scabbied (about 1 week)

■ Course:

1. Start as fever, rash starts 2 days later

2. Rash:

- a. Often starting on the back: **Macule** → **Papule** → **Vesicles** with a red surrounded **Ulcers** (e.g. oral, vaginal) → **crusting**
- b. 2-4 crops of lesions occur during illness

- c. Rash is **very itchy** & in children scratch marks can often be seen.
 d. The whole body can be affected including the soles, oral mucosa & scalp.

■ **Complications:** These are rare
 1. Chickenpox pneumonia (cough, wheeze & shortness of breath)
 2. Encephalomyelitis (signs of meningism)

■ **Management:**

1. Paracetamol (Panadol) & Calamyl lotion
2. Overheating tends to make vesicles itch more
3. If impetigo develops in any of the spots use fucidic acid (R/FUCIDIN 1X2) or Flucloxacillin (R/FLUMOX 1X4X5)
4. Antiviral Acyclovir 800 mg. 5x for 7 days (R/ZOVIRAX 800MG. 1X5X4)

References

1. GP - P 193
2. Oxford handbook of clinical specialties : P 144

20. Shingles D4T

- Due to reactivation of chickenpox virus which was **dormant in dorsal root ganglia**.

■ **Clinical Picture:**

- Tingling, parasthesia or burning pain in the distribution of a single dermatome.
- After 24 hrs. rash appears starting with erythema then Maculopapular & vesicular lesions & progressing to Pustules, crusts, finally scars.
- Shingles is **always unilateral**, it is most likely to occur on the trunk but the face is often affected.

■ **Complications:**

- 2ry bacterial infections
- If the rash is in the trigeminal nerve root distribution, look for spread to eye or nose.
- **Post-herpetic neuralgia** i.e. continued pain after the rash has gone.

384

■ Management:

1. Analgesia: R/PONSTAN CAP. (MEFENAMIC ACID 'NSAID')
2. R/CALAMYL LOTION
3. R/NEURONTIN 900 (GABAPENTIN) for Post-herpetic Neuralgia
4. R/FLUMOX 250 1X4 for 2ry bacterial infection
5. Antiviral R/ZOVIRAX 800 MG 1X5X4 in patient presenting within 72 hrs. of the onset of the rash.

■ **Referral:**

- Refer to ophthalmologist if the rash involves the eye
- Admit if the rash becomes extensive

References

- GP : P197, 198
- Atlas-9, P 39

21. Malaria S4R

■ **Types of Malaria Parasites**

Plasmodium Vivax	• LP = 10-17 days, benign tertian malaria, symptoms every 48 hrs.
P. Ovale	• Similar to P. Vivax but untreated infection lasts less long.
Plasmodium Malariae	• LP = 18-40 days, symptoms every 72 hrs.
	• Untreated infection last about 20 years.
P. Falciparum	• LP = 7-10 days, symptoms 36-48 hrs. Fulminating disease.
	• Transmitted by bite of female Anopheles Mosquito & multiply in RBCs.

■ **Diagnosis: (P. falciparum)**

- Malaria is one of the commonest causes of fever & illness in the tropics.

385

■ Symptoms:

- **Non-specific flue like Prodrome:**
 1. Headache, malaise, myalgia & anorexia.
 2. Followed by fever & chills ± faints.
- **Classic periodic Fever** (peaking every 3rd day i.e. **tertian**)

■ Signs:

- Anemia, jaundice & hepatosplenomegaly
- No rash or lymphadenopathy
- There is a history of **foreign travel** or airport transfer and transients within the last year.

■ Investigations:

1. Take blood for a thick blood film for Malaria Parasites.
2. Send 5ml. of Blood in a standard haematology tube.
3. Request a **thick film** for malaria **urgent** and ensure the results are available within 24 hrs.
4. The result should identify the species of parasite
5. The needs much skill, **don't always believe -ve reports or reports based on thin film done.**
6. If Hx is suggesting Malaria and test is -ve; repeat the blood film at the height of the fever.

■ **Management:** (by infectious disease specialist)

► **Benign Malaria:**

Give chloroquine po 1000 mg. (1gm). 500 mg 6 hrs. later then 500 mg/24 hrs. for 2 days

R/CHLOROQUINE 250 MG. TAB.

OR R/ALEXOQUINE TAB. 250MG.

أقرص حلالاً ثم قرصين بعد 6 ساعات ثم قرصين يومياً لمدة يومين

386

Other Anti-malarial drugs

- Mefloquine (LARIUM®)
- Fansidar (pyrimethamine + sulfadoxine)
- Quinine
- Malarone
- Proguanil

Some complication of malaria

- **Cerebral malaria:** confusion, coma ± fits
- Seizures are common in children
- Hypoglycemia
- Acute renal failure
- Lactic acidosis
- Anemia

22. Giardia & Amoeba D4T

A. Giardia lamblia:

- Protozoan which lives in the duodenum & jejunum
- Spread: Faeco-oral

■ Clinical Picture

- Often a symptomatic
- Lassitude
- Bloating and flatulence
- Abdominal pain
- Loose stool ± explosive diarrhea
- May be malabsorption wt. loss & lactose intolerance

■ Investigation:

- Repeated Stool microscopy maybe -ve.

■ Treatment:

- R/FLAGYL 500 MG. 1X3X5 DAYS
- If diarrhea persist, consider treating all the family
- Avoid milk as lactose intolerance may persist for 6 weeks

B. Entamoeba histolytica:

- Spread: Faeco-Oral
- Boil water and infected food to destroy cysts.
- Trophozoites may remain in the bowel or invade extra-intestinal tissues leaving "Flask Shaped GI Ulcers"
- Presentations may be asymptomatic, with mild diarrhea or with severe amoebic dysentery.

387

- **Amoebic Dysentery:**
1. Diarrhea begins slowly, becoming profuse & bloody
 2. An acute febrile prostrating illness can occur but high fever, colic & tenesmus are rare.
 3. May remit and relapse.

- **Other lesions:**
- Amoebic colonic abscess
 - Amoebomas
 - Amoebic liver abscess

■ **Treatment:**

1. **Chronic disease:**

Give diloxanide furoate 500 mg./8hr. PO for 10 days
 قرصين بعد الأكل ٣ مرات يوميًا لمدة ١٠ أيام
 R/FURAMIDE

2. **Acute amoebic dysentery:**

Give metronidazole 800 mg./8hrs PO for 5 days

قرصين كل ٨ ساعات لمدة ٥ أيام 1x2x5
 R/FLAGYL 500 MG

Then Furamide (Diloxanide 500 mg./8 hrs.) for 10 days

قرصين بعد الأكل ٣ مرات يوميًا لمدة ١٠ أيام
 R/FURAMIDE 500 MG.

References

1. OHCM P 424

23. Septicemia

- **Sepsis =**

Systemic inflammatory response + evidence of microbial origin

■ **Severe Sepsis =**

Systemic inflammatory response + evidence of microbial origin
 + hypoperfusion or dysfunction of at least one organ system

■ **Septic Shock =**

Systemic inflammatory response + evidence of microbial origin
 + hypoperfusion or dysfunction of at least one organ system
 + hypotension refractory to fluid resuscitation.

388

■ **Systemic Inflammatory response syndrome (SIRS):**

SIRS = is defined as the presence of 2 or more of the following:

1. Temperature > 38°C or < 36°C
2. Tachycardia > 90 bpm
3. RR > 120 breaths/min. or PaCO₂ < 4.4 kPa
4. WBC > 12x10⁹/L or < 4x10⁹/L or 10% immature (band) forms.

References

1. OHCM P 779
2. Essential Revision Notes for MBChB by Karla P 273, 274

24. Helminthology D47

A. Nematodes:

Tip: Mass use of albendazole 400mg. every 12hrs. for 3 days to school children may be beneficial

R/ALZENTAL (TAB: 200MG, SUSP. 100MG.) قرصين أو حقنات مرتين يوميًا لمدة ٣ أيام

1. **Ankylostoma duodenale (hook worms)**

- Cause GI bleeding (Fe₂ anemia)

• Treatment: Mebendazole 500mg. PO → one dose + Iron

R/VERM 900 MG قرصين مرة واحدة

OR R/ANTIVER SUSP (100MG.) حقنات مرتين يوميًا لمدة ٣ أيام

2. **Strongyloides stercoralis:**

- Transmitted in skin

• Cause migrating urticaria, chronic diarrhea, abd. Pain

• Treatment: Albendazole 400 mg./12 PO for 7-10 days

قرصين أو حقنات مرتين يوميًا لمدة ٧ أيام
 R/ALZENTAL

3. **Ascaris lumbricoides**

- Faeco-oral transmission

• Often asymptomatic

• Treatment: Mebendazole 500 mg. PO (1 dose)

قرصين مرة واحدة
 R/VERM 900 MG

389

4. **Enterobius vermicularis:**

- Causes anal itch

• Treatment: Mebendazole 100 mg. (1 dose), repeat at 2w

قرصين واحد يكرر بعد أسبوعين if > 2 ys

• Treat the whole family/hygiene is more important than drugs

• Adult worms die after 6w

• Continued symptoms means re-infection.

5. **Trichuris Trichiuria:**

- Cause swimming itch, abdominal pain

• Treatment: Mebendazole 500mg. (1 dose)

قرصين مرة واحدة
 R/VERM 900 MG

6. **Trichinella spiralis:**

- Transmitted by uncooked pork

• Migrates to muscle causing myalgia, myocarditis, peri-

orbital oedema ± fever

• Treatment: Albendazole 400 mg./12 PO for 6-14 d + Pred-

nisolone 40mg./d

قرصين صباحًا لمدة ٨-١٤ يوم واسحب بالتدريج
 R/ALZENTAL 200MG 1x2x2

+ R/SOLUPRED 20 MG.

B. Cestodes (tape worms)

1. **Taenia Solium & T.Saginata**

- T. Solium by eating uncooked pork & contaminated water

• T. Saginata by eating uncooked beef.

- Cause **cysticercosis:**

○ Subcutaneous cysticercosis "nodules"

○ Ocular cysticercosis: uveitis, retinitis, blindness

○ Neurocysticercosis, hydrocephalus, seizures, uveitis

• Treatment: Niclosamide 2g. PO in 2 doses separated by 1 hr.

قرصين الآن ثم قرصين بعد ساعة (أقراص مضغ)
 R/NICLOSAN 500MG.

R/YOMESAN 500MG.

390

H. Nana & Hymenolpis diminuta

- Give praziquantel 25 mg./kg. PO 1 dose

R/DISTOCID (600MG.) قرصين مرة واحدة

• Or Give Niclosamide 500mg./day for 3 days

قرصين يوميًا لمدة ٣ أيام
 R/NICLOSAN

C. Trematodes

1. **Bilharziasis (Schistosomiasis)**

- Cercaria penetrate the leg causing swimmers itch

- **Bilharziasis are three types**

○ S. Mansoni → abd. pain D & V, PHTN, HSM

○ S. Haematobium → Frequency, dysuria, haematuria, in-

continence

○ S. Japonicum

- **Treatment:**

○ **For S. Mansoni, Haematobium**

➤ Give Praziquantel 40 mg./kg. PO with food divided

into 2 doses separated by 4-6 hrs.

قرصين على مرتين بينهما ٤-٦ ساعات
 R/DISTOCID (600 MG.)

For adults 75mg)

○ **For S. Japonicum 20 mg/8hrs. for 1 day**

قرصين بشكل ٨ ساعات
 R/DISTOCID (600mg)

N.B Sudden transitory abdominal pain ± bloody diarrhea may

occur shortly after

2. **Fasciola Hepatica:**

For liver flukes Give Praziquantel 75 mg./kg once

391

25. Antibiotics encyclopedia

1. Pencillins

Members:

- Penicillin G (benzyl penicillin)
- Penicillin V
- Flucloxacillin
- Ampicillin
- Amoxicillin
- Co-amoxiclav
- Piperacillin
- Ticarcillin

- Pencillins are bactericidal Abs
- Accumulate in renal insufficiency (take care in renal failure)
- leads to cerebral irritation
- Avoid intra-thecal injection

Main side effects:

- Allergy and **anaphylaxis**
- Eradication of normal flora → super-infection by candida in the oropharynx.
- **Ab diarrhea** → makes oral contraceptives ineffective
- Cholestatic jaundice

Main uses:

1. Upper respiratory tract infections (rhinitis, sinusitis, pharyngitis, laryngitis, and bronchitis).
2. Urinary tract infection (UTI)
3. Endocarditis, sepsis, and **cellulitis** (penicillin G)
4. Infection d.t pseudomonas (Ticarcillin, Piperacillin)

Prescribing information:

1. Benzyl penicillin (Endocarditis)

- I.M or slow I.V injection or infusion
- 2.4 - 4.8 g/d divided on 4 doses

R\RETAREN VIAL حقنة عضل كل ٤-٢ أسابيع

R\DURAPEN VIAL

R\AQUA PEN 1X2 حقنة عضل كل ١٢ ساعة

2. Flucloxacillin (penicillinase resistant pencillins) كبسولات

- 250-500 mg 1x4 cap or I.M 1x4 or slowly I.V 250-1000 1x4

R\FLUMOX 500 mg cap (flucloxacillin + amoxycillin)

٦ كبسولات ٥٠٠ ملغ قبل الأكل بنصف ساعة

- R\AMPIFLUX (flucloxacillin + ampicillin)

R\AMPICLOX (cloxacillin + ampicillin)

R\FLUCAMOX 500 mg (flucloxacillin + amoxycillin)

3. Ampicillin كبسولات

- 250-1000 mg 1 x4 PO

or I.M 250-500 1x4 or slowly I.V 250-2000 mg 1x4

R\EPICOCILLIN ٦ كبسولات ٢٥٠ ملغ قبل الأكل بنصف ساعة

4. Amoxicillin (more powerful than ampicillin) 1x3

I.M 500 mg or PO 250-500 mg

I.V slow injection or infusion 0.5-1 gm

R\AMOXIL, E-MOX, IBAMOX, BIAMOX ٦ كبسولات ٥٠٠ ملغ قبل الأكل بنصف ساعة

Penicillin combination with B-lactam inhibitors (clavulonic acid - sulbactam - tazobactam) أقراص

5. With clavulonic acid

أعلى Augmentin (Amoxicillin + clavulonic acid) ... أقراص كل ٨ ساعات 1x3

R\AUGMENTIN (Amoxicillin + clavulonic acid) ... أقراص كل ٨ ساعات 1x3

tab. 375 (250+125), 625 (500+125), 1000 (825+125) 1x3

أرخص E-MOXCLAV ... 375, 625, 1000

R\E-MOXCLAV ... 375, 625, 1000

R\HIBIOTIC 375, 625, 1000

R\CURAM 625, 1000

R\MEGAMOX 457, 228, 1 gm

6. with Sulbactam

R\AMPICTAM 375 حقنة كل ١٢ ساعة

R\UNICTAM 375 حقنة كل ١٢ ساعة

R\SULBIN 375 حقنة كل ١٢ ساعة

R\UNASYN 375 حقنة كل ١٢ ساعة

7. With Tazobactam

R\TAZOCIN (piperacillin + tazobactam)

Used in severe pneumonia d.t pseudomonas 2.25, 4.5 vial 1x4

حقنة في الوريد ببطء كل ١٢ ساعة أو في ١٠٠ سم مخلول ببطء

2. Cephalosporins

- β lactam Abs
- Relatively poor penetration to CSF unless the meninges are inflamed

Members:

1st Generation (mainly on G +ve but not enterococci)

- Cefradine
- Cefazoline
- Cephalexin (cefalexin)
- Cefadroxil

2nd Generation (cover both G +ve & -ve) improve G-ve cover but on the expense of G +ve cover

- Cefuroxime
- Cefaclor

- Cefamandole
- Cefprozil

3rd Generation : (Greater on G-ve, less on G +ve)

- Cefotaxim
- Ceftriaxone
- Ceftazidime

Other Cephalosporins:

- Cefpirome
- Cefixime
- Cefpodoxime

Cepharmycin:

- Cefoxitin

Main uses:

1. Cefotaxim is commonly used as a first-line drug for the **ttt of meningitis**
2. Commonly used for **surgical prophylaxis**
3. Like penicillin (β -lactam antibiotics)

Precautions:

1. Avoid in patients with a history of allergy to penicillins
2. Drug can accumulate in renal insufficiency so give the usual initial dose but reduce subsequent doses by half.
3. Not known to be harmful in pregnancy but avoid unless they are essential
4. **Avoid in porphyria**
5. Using broad spectrum Ab $\uparrow$ the risk of **Ab associated diarrhea** (they are the commonest cause)

N.B:

- The word "Cef" is commonly used to describes these drugs
- Be specific about the drug you are prescribing. They don't have the same spectrum

Advice:

- Avoid using broad spectrum drug when one with narrow spectrum will cover the causative organism

Main side effects:

1. Allergy and anaphylaxis
2. Eradication of normal flora

3. Ab associated diarrhea → super-infection by candida in the oropharynx
4. Warn the patient that if they developed diarrhea, the oral contraceptive pills may be ineffective

■ **Drug Interactions:**
Antacids may reduce absorption of these drugs given by mouth

■ **Prescribing Information: Examples:**

1. Cephalexin

- For UTI, resp. tract infections, sinus, skin & a soft infections
- By mouth 250 mg. 1x4 or 500 mg 1x2
- R/CEPOREX (susp. or tab.) (250, 500, 1000) قرص كل ١٢ ساعة
- R/VELOSEF (cephradine) 125, 250, 500, 1000
- R/BIDROXIL cap (cephadroxil) (Susp: 250, 500-Cap: 500)

2. Cefuroxime: (2nd G)

- Commonly used for surgical prophylaxis
- By iv injection or infusion 750 mg. t.d.s (1x3)
- Dose may be doubled in severe infection
- R/CEFUMAX 750 mg.
- R/ZENNAT (125, 250, 500, 750, 1500) كبسولة كل ١٢ ساعة

3. Ceftriaxone: (3rd G)

- Commonly used for ttt of meningitis
- By slow i.v injection or infusion 2gm. 1x1, 1x2 for meningitis
- R/ROCEPHIN 500,1000 vials
- R/CEFTRIAZONE 250,500,1000 vials

4. Ceftazidime: (3rd G) → with greater activity against pseudomonas

- By slow i.v. ivi, 1gm. 1x3
- May double the dose in severe infections
- R/FORTUM 250, 500, 1000 vial

5. Cefotaxim: (3rd G) with broad spectrum

- By slow IV, IVI 1gm. 1x2
- May be increased up to 12gm. daily (in divided doses in severe infection)
- R/CLAFORAN 1 gm
- R/CEFOTAX 1 gm vial حبة كل ١٢ ساعة

6. Other 3rd generation cephalosporins

Cefoperazone

- R/CEFOBID 500, 1000, 2000 vials
- R/SULPERAZONE 1500 vials
- R/CEFAZON 500, 1000 vials

7. Cefepime

- R/MAXIPIME 500,1000 vials
- R/CEFEPIE 500,1000

3. Macrolides

■ Members:

1. Erythromycin
2. Azithromycin
3. Clarithromycin
4. Spiromycin

■ Uses:

1. Have the same spectrum as benzyl penicillin
2. Commonly used if patient is allergic to penicillin
3. Active against bacteria that cause a typical pneumonias (mycoplasma, chlamydia, legionella)
4. Clarithromycin commonly used in H.pylori eradication
5. Erythromycin used topically for ttt of acne

- **Side effects:**
 1. Avoid in hepatic insufficiency (Hepatotoxic)
 2. Reduce the dose in renal insufficiency
 3. Best avoid in pregnancy
 4. Avoid in cardiac conduction abnormalities (prolong Q-T interval)
 5. Cause nausea & vomiting
 6. Rash may be severe
 7. Cholestatic jaundice

■ **Advice for the patient**
Warn the ♀ patients if they developed diarrhea the oral contraceptive pills may be ineffective

■ Prescribing Information

1. Erythromycin:

- By mouth 250-500mg /6hrs.
- 0.5-1gm/12 hrs.
- R/ERYTHROCIN 500 mg tab قرص كل ٦ ساعات

2. Azithromycin:

- By mouth: 500 mg/d for 3 days
- R/ZITHROCIN (cap, susp) 500 كبسولة كل يوم قبل الإفطار لمدة ٣ أيام
- Or R/ZITHROMAX 250 mg. 2x1x3

3. Clarithromycin:

- By mouth 250 mg. bd.
- R/KLACID (tab, susp) 250,500 قرص مرتين يوميا
- R/KLARIMEX 500

4. Quinolones

■ Members

- Ciprofloxacin
- Levofloxacin
- Ofloxacin
- Nalidixic acid
- Norfloxacin
- Moxifloxacin

Quinolones are bactericidal Abs which act on both G⁺ve and G⁻ve bacteria

■ Main uses:

1. Urinary tract infection (UTI)
2. Biliary tract sepsis
3. Food poisoning (campylobacter, salmonella, shigella)
4. Ciprofloxacin is the only drug given by mouth acting against pseudomonas
5. Ciprofloxacin is **Not** active against pneumococci (do not use in pneumonia)
6. Levofloxacin is **better against pneumococci**
7. All Quinolones are Poorly active against staph (Do not use them in skin or soft tissue infections)

■ Take care

1. Halve the dose in renal dse (excreted by the kidney)
2. Hepatotoxic (take care in liver dse)
3. May trigger epilepsy (avoid in epileptic patient)
4. May cause tendon rupture in patient with tendonitis
5. Avoid in G6PD deficiency
6. Warn the female patient that if she developed diarrhea, the oral contraceptive may be ineffective

■ Drug Interactions:

1. Quinolones increase the effect of warfarin
2. Quinolones increase plasma theophylline
3. Quinolones + ciclosporin = nephrotoxic
4. Quinolones + NSAIDs = increase risk of convulsions
5. Antacids decrease absorption of quinolones

Prescribing information:

1. Ciprofloxacin (UTI, GIT infections)

PO 250-750 mg 1x2
 IV infusion 200,400 mg 1x2 ساعة لمدة أسبوع
 R/CIPROFLOXACIN 500 tab (أعلى واحد)
 R/CIPROMAX, CIPROFAR, CIPROBAY
 R/CIPROFLOXACIN 200 mg vial حصة في ١٠٠ سم محلول على مدار ساعة

2. Levofloxacin (powerful Ab in severe pneumonia)

PO 250-500 mg 1x1 or 1x2 على مدار ساعة
 IV infusion 500 mg 1x1 or 1x2
 R/TAVANIC 250,500 "85 LE" (tab)
 500 vial infusion
 أرخص (٣٠ جنيه) قرص واحد يوميا
 R/Lee-FLOX - TAVANIC 900 mg tab قرص واحد يوميا (٨٥ جنيه)
 R/TAVANIC 900 mg tab حصة في ١٠٠ سم محلول على مدار ساعة / ساعة ٢٤ ساعة ٨٥ جنيه
 R/TAVANIC 900 MG INFUSION "82 LE"

3. Nalidixic acid (for UTI only)

PO 400 mg 1x2
 R\NALIDRAM tab

4. Norfloxacin

PO 400 mg 1x2
 R\CONAZ tab (Norfloxacin + Tinidazole) ساعة ١٢ قرص كل

5. Ofloxacin

PO 200-400 mg 1x1 or 1x2
 IV infusion 200-400 mg 1x1 or 1x2 دقيقة ٦٠-٣٠ على مدار
 R\OFLOXIN 200 tab ساعة ١٢ قرص كل

5. Aminoglycosides

Members:

Gentamycin
 Neomycin
 Tobramycin
 Amikacin
 Streptomycin & others

Uses:

1. Most commonly used in **serious G-ve infections**.
2. Has **synergistic effect with penicillin** in ttt of staph. Endocarditis.
3. **Gentamicin** is the usual drug of choice.
4. Amikacin is usually reserved for gentamycin resistant G-ve bacteria.
5. **Tobramycin** is given by **nebulizer** for ttt of pseudomonas aeruginosa in patients with cystic fibrosis.
6. **Neomycin** is **too toxic parentally** so given orally for gut Sterilization in ttt of hepatic encephalopathy.

Contradictions:

1. Avoid in Myasthenia gravis
2. **Avoid in pregnancy** (risk of damage to the baby's vestibular & auditory nerves)

Advice:

1. **Aminoglycosides are not absorbed from the gut**, they must be given parentally
2. Tobramycin can be given by neutralized solution

Side effects:

1. Hypersensitivity is relatively common
2. Streptomycin can cause **contact dermatitis** (wear gloves when handling it)
3. Aminoglycosides can be **ototoxic & nephrotoxic**
4. **Neuromuscular blocking action**
5. Antibiotic associated **diarrhea**
6. **Tobramycin** can cause bronchospasm & haemoptysis when given by nebulizer

Drug Interactions:

1. Potentiate the effect of warfarin
2. Reduce the absorption of vitamin K
3. Nephrotoxicity is increased with loop diuretics & antifungal drugs

Prescribing Information:

1. Gentamycin:

- Once daily regimen
- Twice or 3 times daily regimen by I.M. or slow I.V./I.V.I.
- Usual dose range **60-80 mg. twice/daily**
- **Trade Name:**
 R/GARAMYCIN 80, 40, 20 amp.
 R/GENTAMICIN 20, 40, 80 amp.

2. Amikacin:

- By I.M injection or slow IV injection/infusion 15 mg./kg./day in 2 divided doses
- May be increased to 22.5 mg./kg./day in 3 divided doses
- **Trade Names:**
 R/AMIKIN 100, 250, 500 vial

3. Tobramycin:

- By I.M. or slow IV injection/infusion 3 mg./kg./day in 3 divided doses
- **Trade Names:**
 R/TOBRACIN 40, 80 vial
 R/TOBCIN 80, 20 amp.

4. Others

R/NEOMYCIN 500 1x2 tab.
 R/STREPTOMYCIN vial 1x1 (mainly in ttt of TB)
 R/NETROMYCIN 150, 50 vial (netilmicin) 1x1, 1x3
 R/KANAMYCIN 250, 1000 vial 1x2

References:

1. Oxford handbook of practical drug therapy: P340 to 342
2. MDI P149-150

6. Tetracyclines

Members

Tetracycline
 Oxytetracycline
 Doxycycline
 Minocycline

Uses

1. Broad spectrum antibiotic but now limited by wide spread resistance.
2. Tetracyclines are used in ttt of acne.
3. Drug of choice for infection by **intracellular organisms**:
 - Chlamydia (psittacosis, trachoma, non specific urethritis)
 - Rickettsia (e.g. Q-fever)
 - Brucella (with streptomycin or rifampicin)
 - Spirochetes (Lyme disease)
4. Doxycycline is used in **prophylaxis against malaria**.

Contradictions:

1. Avoid in myasthenia gravis
2. Avoid in diabetes insipidus
3. Avoid hepatic & renal insufficiency
4. Don't give to children (**dental yellowing & hypoplasia**)
5. **Don't give to pregnant or breast feeding women**

Advices:

1. Take **plenty of water** with tetracycline, 30 minutes before food.
2. Avoid taking with chelating agents as milk, supplemental minerals or antacids.
3. Warn the patient that topical tetracyclines can **stain clothing**.

Side effects:

1. Nausea & vomiting are common, can cause oesophageal irritation so, should be taken with plenty of water (**not milk**).
2. **Nephrotoxicity (except doxycycline)**

3. Can cause D.I
4. Can rise urea in the blood without rise in creatinine
- **Take care: this can falsely suggest that the patient has renal insufficiency.**

5. Irreversible pigmentation of the skin.
6. Photosensitive rash.
7. Dental yellowing & hypoplasia.

■ Drug Interactions:

1. Avoid milk & minerals that chelate tetracyclines.
2. Increase the effect of warfarin.
3. Don't give with retinoids (also used for acne) the risk of intracranial HTN is increased.

■ Prescribing information:

1. Tetracycline for infection:

- By mouth 250 mg. /6hrs.
- May be increased to 500 mg./6hrs.
- **Trade Names:**
R/TETRACYCLINE 250 cap. (16 caps.)
R/TETRACID 250 cap. (16 caps.)

2. Minocycline for acne:

- By mouth 100 mg/day (dose may be divided)
- R/VIBRAMYCIN (doxycycline HCL 100 mg.) cap 2x2
- R/TABOCINE (doxycycline 100) cap. 1x2

References:

1. Oxford-drugs: P336 to 338
2. MDL P161

7. Metronidazole & Tinidazole

■ Uses:

1. Treatment of infection by anaerobic bacteria & protozoa.
2. Prophylaxis during abdominal surgery.
3. Metronidazole is used for treatment of **antibiotic associated diarrhea**.
4. Treatment of **giardiasis**.
5. Treatment of **tetanus**.
6. Treatment of trichomonas vaginitis & bacterial vaginosis.
7. Metronidazole can be used topically to **reduce the odour from fungating tumour**.

■ Precautions:

1. No dose adjustment is required in Renal Insufficiency
2. Metabolized by the liver so, **reduce the dose to ½ and give it once daily in severe hepatic insufficiency.**
3. Tinidazole should be avoided during the first trimester of pregnancy.
4. **Metronidazole should be avoided [high doses] during pregnancy.**

■ Advice:

1. Warn the female patients that if they developed diarrhea, the oral contraceptive pills may be ineffective.

■ Prescribing Information:

1. Metronidazole:

• Treatment of anaerobic infections:

- By mouth either 800 mg. initially then 400 t.d.s or 500 t.d.s by IVI 500 mg. t.d.s

• Surgical prophylaxis:

- By mouth 400-500 mg. 3 hrs. before surgery up to further 3 doses can be given every 8 hrs. after high risk procedure.

- By IVI 500 mg. at induction up to 3 further doses
Can be given every 8 hrs. after high risk procedure.

• Treatment of Ab associated diarrhea:

- By mouth 400 mg. t.d.s for 10 days.

Trade names: R/PLAGYL 250, 500, 125 (syrup), infusion.

2. Tinidazole:

• Treatment of anaerobic infections:

- By mouth either 2g initially then 1g daily or 500 mg. bd.

R/FASISYN (4 tabs.) 4x1 (500 mg.)

References:

1. Oxford-drugs: P 352 to 354
2. MDL P 99-100

8. Other antibiotics

Name	Adult dose	Notes	Trade name
Chloramphenicol Rarely used 1 st line. May be used in typhoid fever & Haemophilus infection. Also in blind prescription for meningitis if patient allergic to both penicillins and cephalosporins. Avoid late in lactation & pregnancy.	12.5mg/kg/6h PO or IV; 25mg/kg/6h may be used in septicemia or meningitis	SE (rare): marrow aplasia (check FBC often), neuritis, GI upset. Avoid long or repeated courses and in liver impairment or if CC <10mL/min. Interactions: warfarin, rifampicin, phenytoin, sulfonylureas, phenobarbital.	R/Miphenicol 125, 250, 500
Clindamycin Active against Gram+ve cocci including penicillin resistant staph. and anaerobes.	150-300mg/6h PO; max 450mg/6h PO, 0.2-0.9g/8h IV or IM (by IVI only, if >600mg used)	Stop if diarrhea occurs (pseudomembranous colitis). Used in Staph. bone/joint infection.	R/Dalacin C cap 150 R/Dalacin 600 amp.

Continue: Name	Adult dose	Notes	Trade name
Co-trimoxazole Sulfamethoxazole 400mg + trimethoprim 80mg. 1 st choice in Pneumocystis carinii, toxoplasmosis and nocardia. NB: can act against S.aureus.	960mg-1.44g/12h PO/IVI	SE (mostly sulfonamide, elderly at 1 risk): jaundice; Stevens Johnson syn; marrow depression; folate ↓ if eGFR 15-30 CE: G6PD deficiency.	R/Septirin DS R/Septisul
Imipenem (+cilastatin) very broad spectrum: Gram +ve & -ve organisms, anaerobes & aerobes. β-lactam stable.	250-500mg/6h IVI; if cc 50-90: ½-½ g/6-8h, if 10-50: ½ g/6-12h. Cc <5: dialysis. High doses risk seizures.	Avoid in pregnancy and lactation. SE: fits; D&V; myelosuppression, eosinophilia, WCC ↓, Coombs' +ve, LFTs abnormal. See package insert e.g. if <70kg.	R/Thienam 500, 1000
Meropenem see imipenem.	½-1g/8h IVI, max 2g/8h (1g/12h if eGFR 26-50)	Causes fewer fits than Imipenem.	R/Meropenem 500 (80 L), 1000 (116 L)
Rifampicin ^{OK} = Rifampin ^{IS} Mycobacteria, prophylaxis in meningitis contacts.	Dose example: 600mg x 3/Wk PO before breakfast	↓ Dose in liver disease. Interferes with contraceptive Pill	R/Rifampicin 150, 300
Trimethoprim Used in UTI, COPD. Dose in prophylaxis: 100mg/24h PO.	200mg/12h PO (100mg/12h PO if eGFR <15)	SE: depressed marrow, D&V. CC 10-50: ½ dose after day 3. CC 10-15: ½ dose.	R/Septirin
Vancomycin PO: pseudomembranous colitis if metronidazole is contraindicated; IV: MRSA & other Gram +ve organisms (not Erysipelothrix species).	125mg/6h PO; 1g/12h IVI over 100min; do peak level 2h post-IVI e.g. after dose 3; aim for <30mg/L, & <10mg/L before dose 4	In renal failure, get help. SE: renal and Ototoxicity. Do not overuse (risk of multiple resistance)	R/Vancomycin vial 500mg

26. Incubation periods

1. Incubation period usually < 1wk

Staphylococcal enteritis	1-6h
Salmonella enteritis	6-48h (usually 12-24h)
Bacillary dysentery (Shigella)	1-7days (usually 1-3days)
Botulism	12-96h (usually 18-36h)
Cholera	2-5days
Gas gangrene	1-12days (usually 3-5days)
Diphtheria	2-10days (usually 7days)
Gonorrhoea	1-7days (usually 3days)
Legionnaires' disease	1-4days
Meningococcal sepsis	3-6days
Scarlet fever	
Yellow fever	

2. Incubation period usually 1-3wks

Brucellosis	7-21days
Chickenpox	7-23days (usually 14days)
Lassa fever	3-16days
Leptospirosis	2-21days (usually 7-12days)
Tetanus	7-14days (occasionally longer)
Malaria (vivax, malariae, ovale)	12-40days (occasionally >1yr)
Malaria (malariae, ovale)	10-18days (rash usually 14-18days)
Measles	14-18days
Mumps	5-14days (usually 7-10days)
Pertussis (whooping cough)	3-21days (usually 7-10days)
Poliovirus	14-21days
Rubella	1day-3 months (usually 4-14days)
Typhoid	8-21days
Typhus	4-21days

3. Incubation period usually > 3wks

Amoebiasis	2wks-many months
Hepatitis A	3-5wks (usually 4wks)
Hepatitis B, Hepatitis C	6wks-6 months
HIV	3wks-3 months (anti-HIV appears)
Infectious mononucleosis	4-6wks
Rabies	4days-2yrs (usually 3-12wks)
Syphilis	10days-10wks (usually 3wks)

4. Duration of infectivity of infectious diseases

Chickenpox	5days before rash until last vesicle crusts
Hepatitis A	2wks before until 1wk after jaundice starts
Measles	From initial symptoms to 5days after rash appears
Mumps	3days before to 1wk after salivary swelling

- 17.I.P. of P. falciparum = 7-10 days.
- 18.EBV causes Glandular Fever.
- 19.HSV2 causes Genital herpes.
- 20.I.P. of enteric fever = 3-21 days.
- 21.I.P. of measles = 7-21 days.
- 22.Rubella infectivity = 5 days before the rash & 5 days after the rash starts
- 23.I.M. of mumps = 14-21 days.
- 24.Mumps infectivity = 7 days before & 9 days after
- 25.Orchitis affects 1/4 male cases of mumps.
- 26.I.P. of polio is 7 days.
- 27.Meningism = neck stiffness, photophobia & kernig's sign.
- 28.Kernig's sign = pain + resistance on passive knee extension with hip fully extended.
- 29.I.P. of chicken pox = 11-21 days.
- 30.Infectivity of chicken pox = 4 days before the rash until the lesions have scabbed (about 1 week).
- 31.Shingles (herpes zoster) is a reactivation of chicken pox virus.
- 32.Penicillins are bactericidal abs.
- 33.Penicillins are used in URTI, UTI, endocarditis, sepsis, cellulitis & infection d.t. pseudomonas.
- 34.Penicillins + aminoglycosides = synergism.
- 35.The word "Cef" is usually used to describe cephalosporins.
- 36.Common side effect of penicillins and cephalosporins is antibiotic associated diarrhea.
- 37.Take care of allergy & hypersensitivity when prescribing penicillins or cephalosporins.
- 38.When prescribing penicillins, cephalosporins, macrolides and Quinolones warn the female patient that if she developed diarrhea, the oral contraceptives may be ineffective.
- 39.Antacids decrease absorption of quinolones
- 40.Avoid aminoglycosides in pregnancy & childhood.
- 41.Avoid aminoglycosides in myasthenia gravis.
- 42.Aminoglycosides can be ototoxic & nephrotoxic.
- 43.Aminoglycosides are used in serious g-v infections.
- 44.Don't give tetracyclines to children (dental yellowing and hypoplasia).
- 45.Don't give tetracyclines to pregnant or breast feeding women.
- 46.Avoid taking tetracyclines with milk and antacids.
- 47.Don't rely on Widal test in diagnosis of enteric fever, it may be -ve.

Pertussis	3days before until 3wks after start of symptoms
Rubella	(3days if on erythromycin)
Scarlet fever	1wk before to 5days after onset of rash (1day if on penicillin)

27. Notifiable infectious diseases in Britain (ND)

• Anthrax • Cholera • Diphtheria • Dysentery (amoebic or bacillary) • Food poisoning • Scarlet fever • Smallpox • Tetanus • Tuberculosis	• Leptospirosis • Malaria • Measles • Meningococcal infection • Mumps • Typhoid fever • Typhus • Viral haemorrhagic fever (e.g. Lassa fever)	• Paratyphoid fever • Plague • Poliomyelitis (acute) • Rabies • Relapsing fever • Rubella • Viral hepatitis • Whooping cough • Yellow fever
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Put in Your Mind

1. Staphylococci infect skin, lids or wounds.
2. MRSA = Methicillin resistant staph.
3. Strept. may cause wound infections, skin infections such as impetigo, tonsillitis, scarlet fever.
4. Strept pneumoniae cause pneumonia O.M., meningitis & septicaemia.
5. Strept. usually respond to a combination of ampicillin & gentamycin.
6. Clostridia cause wound infections, gas gangrene & botulism.
7. E-coli & salmonella are common cause of UTI & intra abdominal sepsis & are sensitive to ampicillin & trimethoprim.
8. I.P. of scarlet fever is 2-4 days.
9. Strawberry tongue: think of scarlet fever.
10. PUO: remember malaria, brucella, UTI, infections, tms.
11. Clinical features of tetanus are locked jaw, hyperactive facial Ms. & opisthotonus.
12. HSV1 infection usually affects the lips, tongue, anterior buccal mucosa or nostrils.
13. Lyme disease is a tick borne disease & treated by doxycycline
14. Types of malaria parasites are plasmodium vivax, ovale, malariae, falciparum.
15. I.P. of P. vivax = 10-17 days.
16. I.P. of P. malariae = 18-40 days.

Test yourself

1. Treatment of enteric fever?
2. I.P. of measles =
قلو شكتك في حالة التهاب حاد في اية للبرص قبل التحويل ؟
3. The main side effect of penicillins is
4. G+ve or G-ve or not stained with G stain
5. Staph. A
Neisseria
E. coli
Strept. Pneumoniae
Mycobacterium T.B
Pseudomonas.....
6. 1/2 of males with mumps develop
7. Metronidazole is usually used in ttt of
8. Enterobacteria are a common cause of
9. Treatment of chickenpox?
10. علاج التهاب في الوحدات الصحية؟
11. Staph aureus toxins cause
12. Definition of PUO is
13. 3 lines of ttt of boils?
14. Severe staph infections are
15. Treatment of benign malaria?
16. Pseudomonas aeruginosa is treated by

17. Clarithromycin is usually used in
18. Necrotizing fasciitis is caused by
19. *Streptococcus milleri* is a common cause of
20. Uses of penicillins?
21. The main side effects of aminoglycosides are
22. Treat a case of brucellosis?
23. Antacids decrease absorption of (Ab)
24. Treatment of *Giardia lamblia*?
25. *Streptococcus* usually respond to a combination of &
26. Def of septic shock?
27. Ciprofloxacin is used in tt of (Ab)
28. Aminoglycosides has synergistic effect with (Ab)
29. Enterobacteria usually respond to
30. Mention the scientific name, category
- Cefotax
Tavanic
Ciprofar
Flagyl
Zithromycin
E-mox
Augmentin
Klacid
Amikacin
Tienam

- Distocid
Meronom
Alzental
Dalacin C
Septrin
Vancocin
Tetracid
Conaz

Answers

1. R/Ciprofloxacin 500mg/12 po for 6 days
2. 7-12 days
3. Benzyl penicillin 1.2 gm im iv
4. Dexam. amp. im
5. amphotericin
6. +ve
7. -ve
8. -ve
9. +ve
10. Not stained with G. stain
11. -ve
12. Otitis
13. Giardiasis, tetanus
14. GE - UTI
15. R/Ponstan cap. 1x3
16. R/Calmox 1x3
17. R/Flumox 250 1x4
18. R/Zovirax 800 mg 1x5x7
19. R/Neurotin 300
20. كسولة واحدة يوميا لمدة ٦-٨ أسابيع
21. كسولات دايوم والتدريج
22. كسولات تتعطل على الأكل في الحصة من
23. أكل
24. راحة ٦ أسابيع
25. R/Alzental 1x2x3
26. Food poisoning and toxic shock syndrome
27. Fever (temp. over 38.5°) lasting > 3 weeks
28. Analgesic, Ab, ice
29. *Parasomna*, *osteomyelitis*, *septic arthritis*, *endocarditis*, *septicemia*
30. R/Cloxacillin 250mg ٤ مرات يوميا لمدة ٦-٨ أسابيع
31. Piperacillin (Zanox) + amikacin (gentamicin)
32. H. pylori eradication
33. Streptococci
34. Dental caries
35. Upper respiratory tract infections (rhinitis, sinusitis, pharyngitis, laryngitis, and bronchitis)
36. Urinary tract infection (UTI)
37. Endocarditis, sepsis, and cellulitis (penicillin G)
38. Infection of *Pseudomonas* (Ticarcillin, Piperacillin)
39. Osteotoxicity, nephrotoxicity
40. Doxycycline 100mg/12hr po for 6 weeks + ampicillin 1gm/day im for 2-3 weeks
41. gentamicin
42. R/Flagyl 500/1x3x5
43. R/Flagyl 500 1x3x5
44. R/Furamide 500 1x3x10
45. Ampicillin - Amikacin
46. Systemic inflammatory response + evidence of microbial origin + hypotension or dysfunction of at least one organ system + hypotension refractory to fluid resuscitation
47. GE, UTI
48. Penicillin
49. Ampicillin and trimethoprim
50. Cloxacillin, 1st gen. cephalosporins
51. Levofloxacin, quinolones
52. Ciprofloxacin, quinolones
53. Metronidazole
54. Aciclovir, nucleosides
55. Amoxicillin, penicillin
56. Amox-clav, penicillin
57. Clarithromycin, macrolides
58. Atidaxin, aminoglycosides
59. Isopenten, carbapenem
60. Pransanal
61. Monopent, carbapenem
62. Alendazole
63. Chlorthalidone
64. Co-trimoxazole
65. Vancomycin
66. Tetracycline
67. Neofluorant quinolones
68. Flucanazole